2007 WQIF RFP Workshops

Application Form Examples – Completed Budget Narrative & NPS Results

Six WQIF RFP workshops were held March 5 – 14, 2007. A segment of each workshop focused on completing the 2007 WQIF Application Form. This document provides the example completed budget narrative and the six examples for completing the NPS Results section of the 2007 WQIF Application Form, as shared with workshop participants.

*Project sponsors who are interested in using Chesapeake Bay Model Phase 4.3 (Bay Model), BMP efficiencies and per acre load reductions based on the appropriate model segment, for estimating the NPS Results are advised to contact the DCR Regional Office for assistance.

Example ~ Budget Narrative Section

NOTE: This example was developed as a reference for completing the budget narrative section of the WQIF application form. This is not a real life project and is only a made up example based on a hodgepodge of type of activities that would be considered for funding under the 2007 WQIF RFP.

4. BUDGET NARRATIVE

This section must clearly identify estimated project costs according to the budget categories provided below. Identify all expected project costs and all sources of match funds. Additional rows may be added under the budget categories to provide a line item detail. Rows for budget categories not included in the proposed project budget may be deleted. Reference the 2007 WQIF RFP Attachment B "Budget Narrative Guidelines" in completing this section.

BUDGET CATEGORIES & ITEMIZED DESCRIPTION	WQIF Grant	Match Funds
PERSONNEL *Personnel Subtotal→*	$ 2,700	$ 7,748
- Virginia SWCD – Project management staff, Conservation Specialist. Project coordination, recruit landowners, and grant reporting. 300 hours @ $18 / hour = $5,400. (50% WQIF and 50% match)	**$ 2,700**	**$ 2,700**
- Local Health Department – In-kind technical assistance. Estimate based on 15 septic systems X 3 hours / system + 5 hours for meetings, etc. 50 hours @ $20 / hour = $1000		**$ 1,000**
- County engineer – Input on SWM ordinance to be developed. Plan review and approval for SWM demonstration sites. 40 hours @ $45 / hour = $1,800.		**$ 1,800**
- Creek Watershed Committee, volunteers hours for development of educational materials, signage, and literature. 3 volunteers, total of 120 hours @ $18.73 / hour volunteer rate = $2,248		**$ 2,248**
FRINGE BENEFITS *Fringe Subtotal→*	$ 945	$ 945
- 35% fringe rate for SWCD personnel cost. (If the SWCD is the project sponsor, fringe match for the SWCD personnel can be listed, but fringe for the Local Health Department or County staff cannot be listed as match. This is based on who is the applicant.)	**$ 945**	**$ 945**
TRAVEL *Travel Subtotal→*	$ 194	
- Project manager site visits and meetings. 400 miles X $0.485 = $195	**$ 194**	
EQUIPMENT & SUPPLIES - There were no Equipment or Supply expenses proposed in this example project budget narrative so these category lines were deleted.		
CONTRACTUAL *Contractual Subtotal→*	$ 20,000	$ 10,000
Stormwater Ordinance Development by paid consultant. Research, authoring, coordination of meetings and review and approval. Match from County.	**$20,000**	**$10,000**

CONSTRUCTION *Construction Subtotal→*	$ 145,000	$ 65,000
- Contractor TBD. Streambank restoration and stabilization. 3,000 feet @ $20 per linear foot = $60,000 and 300 feet at $300 per linear feet = $90,000. Match funding from NFWF General Matching Grants Program.	**$ 100,000**	**$ 50,000**
- SWCD payments to landowners. Onsite sewage disposal system repair or replacement. 15 systems @ ~ $4,000 / each = $60,000. 75% cost-share, 25% landowners match.	**$ 45,000**	**$ 15,000**
OTHER DIRECT *Other Direct Subtotal→*	$ 4,000	$ 120,000
- Conservation Easement. 30 acres along stream corridor to be put into permanent easement co-held by SWCD and/or County. Appraisal and other costs for processing easement requested by WQIF. Estimated appraisal value included as match @ $4,000 / acre.	**$ 4,000**	**$ 120,000**
INDIRECT COSTS - There were no Indirect Costs counted as match in this example project budget narrative so these category lines were deleted.	Not allowed	
TOTAL COSTS	**$ 172,839**	**$ 203,693**

Example ~ Urban Nutrient Management

<table>
<tr><th colspan="7">5. NPS RESULTS & NPS POLLUTION REDUCTION ESTIMATES</th></tr>
<tr><td>BMP(s) Name and Work Description</td><td colspan="6">(Specify and describe the type of BMPs to be installed, repaired, replaced, retrofitted or otherwise modified.)
Urban nutrient management plans</td></tr>
<tr><td>Estimate Size or Quantity of BMP(s):</td><td colspan="6">(Specify targeted number of acres, linear feet, number of units or other appropriate unit for BMPs to be implemented.)
Targeting 50 county athletic fields with an average size of 2 acres for a total of 100 acres.</td></tr>
<tr><td>Drainage Area: (If applicable)</td><td colspan="6">(Estimate drainage area, such as acres to be treated by BMP(s) and including % acres or % of area to be treated that is pervious vs. impervious.) N/A</td></tr>
<tr><td rowspan="2">Estimated annual NPS reductions: (If possible)</td><td>4000 lbs</td><td>Nitrogen (lbs)</td><td>4000 lbs</td><td>Phosphorus (lbs)</td><td></td><td>Sediment __ (lbs)
__ (tons)</td></tr>
<tr><td colspan="3">List other Pollutant(s) and reductions (e.g. Pathogens).</td><td colspan="3"></td></tr>
<tr><td>Describe basis or source for NPS reduction estimates:</td><td colspan="6">(e.g. SWM engineering calculations, Bay Model efficiencies, TMDL studies and implementation plans, National Small Flows standards for septic, scientific study results, manufactured BMP design specifications, etc.)
<u>Source:</u> DCR Urban Nutrient Management Specialist

A rough estimate of the average amount of nitrogen and phosphorus <u>no longer applied</u> to managed turf lands (i.e. those previously receiving fertilizer applications) after they are put under an urban nutrient management plan:
- 40 lbs of nitrogen / acre
- 40 lbs of phosphorus / acre

40 lbs / acre X 100 acres = 4,000 lbs N & P reduced</td></tr>
<tr><td>Other NPS Results information:</td><td colspan="6"></td></tr>
</table>

Example ~ Urban Nutrient Management (Bay Model)

<table>
<tr><th colspan="8">5. NPS RESULTS & NPS POLLUTION REDUCTION ESTIMATES</th></tr>
<tr><td>BMP(s) Name and Work Description</td><td colspan="7">(Specify and describe the type of BMPs to be installed, repaired, replaced, retrofitted or otherwise modified.)
Urban nutrient management plans</td></tr>
<tr><td>Estimate Size or Quantity of BMP(s):</td><td colspan="7">(Specify targeted number of acres, linear feet, number of units or other appropriate unit for BMPs to be implemented.)
Targeting 50 county athletic fields with an average size of 2 acres for a total of 100 acres.</td></tr>
<tr><td>Drainage Area: (If applicable)</td><td colspan="7">(Estimate drainage area, such as acres to be treated by BMP(s) and including % acres or % of area to be treated that is pervious vs. impervious.) N/A</td></tr>
<tr><td rowspan="2">Estimated annual NPS reductions: (If possible)</td><td>109.4 lbs</td><td>Nitrogen (lbs)</td><td>24.7 lbs</td><td>Phosphorus (lbs)</td><td></td><td>Sediment __ (lbs) __ (tons)</td></tr>
<tr><td colspan="3">List other Pollutant(s) and reductions (e.g. Pathogens).</td><td colspan="3"></td></tr>
<tr><td>Describe basis or source for NPS reduction estimates:</td><td colspan="7">(e.g. SWM engineering calculations, Bay Model efficiencies, TMDL studies and implementation plans, National Small Flows standards for septic, scientific study results, manufactured BMP design specifications, etc.)
<u>Source:</u> CBP Bay Model Phase 4.3, NPS BMP Efficiencies

Mixed Open - Segment 900
(Per-acre loads based on land use X BMP efficiency)
N = 6.435 X 17% = 1.094 X 100 acres = 109.4 lbs N
P = 1.124 X 22% = 0.247 X 100 acres = 24.7 lbs P
S = 0.068 X N/A</td></tr>
<tr><td>Other NPS Results information:</td><td colspan="7"></td></tr>
</table>

Example ~ Stormwater Management BMPs

<table>
<tr><th colspan="7">5. NPS RESULTS & NPS POLLUTION REDUCTION ESTIMATES</th></tr>
<tr><td>BMP(s) Name and Work Description</td><td colspan="6">(Specify and describe the type of BMPs to be installed, repaired, replaced, retrofitted or otherwise modified.)
5 detention pond retrofits:
- Sediment forebay, riser, and shallow marsh constructed on 5 ponds for enhanced extended detention.
- Estimated drainage area for each pond is ~ 10 acres with ~ 60 % impervious surface.

10 parking lot impervious surface retrofits:
- 10 bioretention basins or infiltration trench retrofits. Each estimated to have ~ 1 acre drainage area with 65% impervious surface.</td></tr>
<tr><td>Estimate Size or Quantity of BMP(s):</td><td colspan="6">(Specify targeted number of acres, linear feet, number of units or other appropriate unit for BMPs to be implemented.)
See above.</td></tr>
<tr><td>Drainage Area:
(If applicable)</td><td colspan="6">(Estimate drainage area, such as acres to be treated by BMP(s) and including % acres or % of area to be treated that is pervious vs. impervious.)
See above.</td></tr>
<tr><td rowspan="2">Estimated annual NPS reductions:
(If possible)</td><td></td><td>Nitrogen (lbs)</td><td>40.9 lbs</td><td>Phosphorus (lbs)</td><td></td><td>Sediment __ (lbs)
__ (tons)</td></tr>
<tr><td colspan="3">List other Pollutant(s) and reductions (e.g. Pathogens).</td><td colspan="3"></td></tr>
<tr><td>Describe basis or source for NPS reduction estimates:</td><td colspan="6">(e.g. SWM engineering calculations, Bay Model efficiencies, TMDL studies and implementation plans, National Small Flows standards for septic, scientific study results, manufactured BMP design specifications, etc.)
Virginia Stormwater Management Manual. Simple Method Pollutant Load, Equation 5-15, used for calculating pollutant load based on average land cover condition. Chapter 1, Table 1 used for phosphorus removal efficiencies for proposed BMPs.</td></tr>
</table>

Other NPS Results information:	**Simple Method Equation** **L = [0.05 + (0.009 x I)] X A x 2.28** **L = total phosphorus load (pounds per year)** **I = existing impervious cover (% as a whole number)** **A = applicable area (acres)** **<u>PHOSPHORUS REDUCTION ESTIMATES</u>** **Enhanced extended detention, shallow marsh:** **L = [0.05 + (0.009 x 60)] X 10 acres X 2.28** **L = 13.45 lbs / year phosphorus load** **13.45 x 50% P removal efficiency = 6.73 P reduced** **6.73 P reduced X 5 BMPs = 33.65 P lbs reduced** **Bioretention basins or infiltration trenches:** **L = [0.05 + (0.009 x 65)] X 1 acre X 2.28** **L = 1.45 lbs / year phosphorus load** **1.45 lbs X 50% P removal efficiency = 0.725 lbs P reduced** **0.725 lbs P reduced X 10 BMPs = 7.25 lbs P reduced** **Total:** **33.65 lbs + 7.25 lbs = 40.9 lbs P reduced / year**

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One approach for estimating N & S values based on P

Estimated annual NPS reductions: (If possible)	**314.6 lbs**	Nitrogen (lbs)	**40.9 lbs**	Phosphorus (lbs)	**8573.3 lbs**	Sediment __ (lbs) __ (tons)
	List other Pollutant(s) and reductions (e.g. Pathogens).					
Describe basis or source for NPS reduction estimates:	*(e.g. SWM engineering calculations, Bay Model efficiencies, TMDL studies and implementation plans, National Small Flows standards for septic, scientific study results, manufactured BMP design specifications, etc.)* **Virginia Stormwater Management Manual. Simple Method Pollutant Load, Equation 5-15, used for calculating pollutant load based on average land cover condition. Chapter 1, Table 1 used for phosphorus removal efficiencies for proposed BMPs.** **The following National Average Concentrations in Runoff were used to estimate N & S reductions, based on P reduction calculated through Simple Method:** - **TP = 0.26 mg/l <u>therefore</u> TP = 40.9 lbs** - **TN = 2.00 mg/l TN = 314.6 lbs** - **TSS = 54.50 mg/l TSS = 8573.3 lbs**					

Example ~ Stormwater Management BMPs (Bay Model)

<table>
<tr><th colspan="7">5. NPS RESULTS & NPS POLLUTION REDUCTION ESTIMATES</th></tr>
<tr><td>BMP(s) Name and Work Description</td><td colspan="6">(Specify and describe the type of BMPs to be installed, repaired, replaced, retrofitted or otherwise modified.)
5 detention pond retrofits:
- Sediment forebay, riser, and shallow marsh constructed on 5 ponds for enhanced extended detention.
- Estimated drainage area for each pond is ~ 10 acres with ~ 60 % impervious surface.

10 parking lot impervious surface retrofits:
- 10 bioretention basins or infiltration trench retrofits. Each estimated to have ~ 1 acre drainage area with 65% impervious surface.</td></tr>
<tr><td>Estimate Size or Quantity of BMP(s):</td><td colspan="6">(Specify targeted number of acres, linear feet, number of units or other appropriate unit for BMPs to be implemented.)
See above.</td></tr>
<tr><td>Drainage Area:
(If applicable)</td><td colspan="6">(Estimate drainage area, such as acres to be treated by BMP(s) and including % acres or % of area to be treated that is pervious vs. impervious.)
See above.</td></tr>
<tr><td rowspan="2">Estimated annual NPS reductions:
(If possible)</td><td>211.09 lbs</td><td>Nitrogen (lbs)</td><td>25.19 lbs</td><td>Phosphorus (lbs)</td><td>5.31 tons</td><td>Sediment __ (lbs)
__ (tons)</td></tr>
<tr><td colspan="3">List other Pollutant(s) and reductions (e.g. Pathogens).</td><td colspan="3"></td></tr>
<tr><td>Describe basis or source for NPS reduction estimates:</td><td colspan="6">(e.g. SWM engineering calculations, Bay Model efficiencies, TMDL studies and implementation plans, National Small Flows standards for septic, scientific study results, manufactured BMP design specifications, etc.)
<u>Source:</u> CBP Bay Model Phase 4.3, NPS BMP Efficiencies</td></tr>
</table>

Other NPS Results information:	**CBP PHASE 4.3 MODEL, NPS EFFICIENCIES** **Extended Detention, Pervious Urban - Segment 900** **(Per-acre loads based on land use X BMP efficiency)** **N = 10.825 X 30% = 3.248 X 10 acres X 5 BMPs = 162.38 lbs N** **P = 1.527 X 20% = 0.304 X 10 acres X 5 BMPs = 15.27 lbs P** **S = 0.137 X 60% = 0.082 X 10 acres X 5 BMPs = 4.11 tons S** **Infiltration Practices, Pervious Urban - Segment 900** **(Per-acre loads based on land use X BMP efficiency)** **N = 10.825 X 50% = 5.413 X 1 acre X 5 BMPs = 27.06 lbs N** **P = 1.527 X 70% = 1.069 X 1 acre X 5 BMPs = 5.34 lbs P** **S = 0.137 X 90% = 0.123 X 1 acre X 5 BMPs = 0.62 tons S** **Filtration (Bioretention), Pervious Urban - Segment 900** **(Per-acre loads based on land use X BMP efficiency)** **N = 10.825 X 40% = 4.330 X 1 acre X 5 BMPs = 21.65 lbs N** **P = 1.527 X 60% = 0.916 X 1 acre X 5 BMPs = 4.58 lbs P** **S = 0.137 X 85% = 0.116 X 1 acre X 5 BMPs = 0.58 tons S** **Total N = 162.38 lbs + 27.06 lbs + 21.65 lbs = 211.09 lbs N** **Total P = 15.27 lbs + 5.34 lbs + 4.58 lbs = 25.19 lbs P** **Total S = 4.11 lbs + 0.62 lbs + 0.58 lbs = 5.31 tons S**

Example ~ Residential Septic Systems

<table>
<tr><th colspan="7">5. NPS RESULTS & NPS POLLUTION REDUCTION ESTIMATES</th></tr>
<tr><td>BMP(s) Name and Work Description</td><td colspan="6">(Specify and describe the type of BMPs to be installed, repaired, replaced, retrofitted or otherwise modified.)
VA Agriculture Cost-Share Manual, TMDL Supplement BMPs:
- RB-1 Septic Tank Pumpout
- RB-3 Septic Tank System Repair
- RB-4 Septic Tank System Installation/Replacement
- RB-5 Alternative On-Site Waste Treatment Systems</td></tr>
<tr><td>Estimate Size or Quantity of BMP(s):</td><td colspan="6">(Specify targeted number of acres, linear feet, number of units or other appropriate unit for BMPs to be implemented.) Targeting:
- 200 households for septic pumpout
- 10 septic tank repairs
- 30 septic tank installation or replacement
- 5 alternative septic systems</td></tr>
<tr><td>Drainage Area: (If applicable)</td><td colspan="6">(Estimate drainage area, such as acres to be treated by BMP(s) and including % acres or % of area to be treated that is pervious vs. impervious.) N/A</td></tr>
<tr><td rowspan="2">Estimated annual NPS reductions: (If possible)</td><td>336.6 lbs</td><td>Nitrogen (lbs)</td><td></td><td>Phosphorus (lbs)</td><td></td><td>Sediment __ (lbs)
__ (tons)</td></tr>
<tr><td colspan="3">List other Pollutant(s) and reductions (e.g. Pathogens).</td><td colspan="3">3.05E+12 fecal bacteria</td></tr>
<tr><td>Describe basis or source for NPS reduction estimates:</td><td colspan="6">(e.g. SWM engineering calculations, Bay Model efficiencies, TMDL studies and implementation plans, National Small Flows standards for septic, scientific study results, manufactured BMP design specifications, etc.)
<u>Source:</u> DCR Estimates Developed for TMDL Program (2006)

Nitrogen (practice # → multiplier X BMPs = load reduced):
- RB-1 → <u>0.5149</u> lbs/yr X 200 pump outs = 102.98 lbs/yr
- RB-3 → <u>4.248</u> lbs/yr X 10 tank repairs = 42.48 lbs/yr
- RB-4 → <u>5.664</u> lbs/yr X 30 systems = 169.92 lbs/yr
- RB-5 → <u>4.248</u> lbs/yr X 5 alternate systems= 21.24 lbs/yr
- TOTAL = 336.62 lbs nitrogen reduced per year

Fecal Bacteria: (practice # → load fraction X fecal load of colony forming units/yr/house X BMPs = load reduced)
- RB-1 → <u>0.10</u> X 4.98E+10 cfu/yr/house X 200 = 9.95E+11
- RB-3 → <u>0.75</u> X 4.98E+10 cfu/yr/house X 10 = 3.73E+11
- RB-4 → <u>1.00</u> X 4.98E+10 cfu/yr/house X 30 = 1.49E+12
- RB-5 → <u>0.75</u> X 4.98E+10 cfu/yr/house X 5 = 1.87E+11
- TOTAL = 3.05E+12 fecal bacteria reduced per year</td></tr>
<tr><td>Other NPS Results information:</td><td colspan="6"></td></tr>
</table>

Example ~ Stream Restoration

<table>
<tr><th colspan="7">5. NPS RESULTS & NPS POLLUTION REDUCTION ESTIMATES</th></tr>
<tr><td>BMP(s) Name and Work Description</td><td colspan="6">(Specify and describe the type of BMPs to be installed, repaired, replaced, retrofitted or otherwise modified.)
Stream restoration using a combination of traditional and bioengineering techniques and natural stability concepts. Final BMPs are still to be determined.</td></tr>
<tr><td>Estimate Size or Quantity of BMP(s):</td><td colspan="6">(Specify targeted number of acres, linear feet, number of units or other appropriate unit for BMPs to be implemented.)
Estimated size of streambank section to be stabilized: 200 linear feet, average bank height is 7 feet.</td></tr>
<tr><td>Drainage Area: (If applicable)</td><td colspan="6">(Estimate drainage area, such as acres to be treated by BMP(s) and including % acres or % of area to be treated that is pervious vs. impervious.)</td></tr>
<tr><td rowspan="2">Estimated annual NPS reductions: (If possible)</td><td>498.75 lbs</td><td>Nitrogen (lbs)</td><td>133 lbs</td><td>Phosphorus (lbs)</td><td>166.25 tons</td><td>_ (lbs)
<u>X</u> (tons)</td></tr>
<tr><td colspan="3">List other Pollutant(s) and reductions (e.g. Pathogens).</td><td colspan="3"></td></tr>
<tr><td>Describe basis or source for NPS reduction estimates:</td><td colspan="6">(e.g. SWM engineering calculations, Bay Model efficiencies, TMDL studies and implementation plans, National Small Flows standards for septic, scientific study results, manufactured BMP design specifications, etc.)
Conversion values used in estimating N & P lbs per ton of sediment are nitrogen = 3 lbs and phosphorus = 0.8 lbs. Source: Brady, N. C. (1984) The Nature and Properties of Soils (9th edition). MacMillion Publishing Co, New York.</td></tr>
<tr><td>Other NPS Results information:</td><td colspan="6">Erosion measurement based on aerial photo depicting top of bank movement ranging from 6 to 15 feet between 2002 and 2005. Average movement estimated at 10 feet.
Estimated soil loss between 2002 and 2005:
200 ft w x 7 ft h x 10 ft d = 14,000 ft^3, 4 year soil loss
14,000 ft^3 / 4 years = 3,500 ft^3 annual reduction

Conversion of cubic feet to pounds of sediment
Soil weighs 90 – 100 lbs per cubic foot (95 lbs average)
3,500 ft^3 x 95 lbs / ft^3 average weight = 332,500 lbs

332,500 lbs / 2000 lbs per ton= 166.25 tons sediment
166.25 tons x 3 lbs nitrogen = 498.75 lbs nitrogen
166.25 tons x 0.8 lbs nitrogen = 133 lbs phosphorus</td></tr>
</table>